



SEQUENCE LISTING

<110> YAMASHITA, ICHIRO

<120> High estrogen-sensitive medaka fish

<130> 210217US-620-7249-0

<140> US 09/893,666

<141> 2001-06-29

<150> JP 2000-247729

<151> 2000-08-17

<160> 7

<170> PatentIn version 3.1

<210> 1

<211> 2764

<212> DNA

<213> Oryzias latipes

<220>

<221> CDS

<222> (211)..(1935)

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cgccctctcgcc cccgtgaccc cctcggtgac atg tac cct gaa gag agc cgg ggt 234
Met Tyr Pro Glu Ser Arg Gly
1 5tct gga ggg gtg gct gtc gtg gac ttt ttg gaa ggg acg tac gac tat 282
Ser Gly Gly Val Ala Val Asp Phe Leu Glu Gly Thr Tyr Asp Tyr
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Ala Ala Pro Asn Pro Ala Thr Thr Pro Leu Tyr Ser Gln Ser Ser Thr
25 30 35 40ggc tac tac tct gct ccc ctg gaa aca aac gga ccc ccc tca gaa ggc 378
Gly Tyr Ser Ala Pro Leu Glu Thr Asn Gly Pro Pro Ser Glu Gly
45 50 55agt ctg cag tcc ctg ggc agt ggg ccg acg agc cct ctg gtg ttt gtg 426
Ser Leu Gln Ser Leu Gly Ser Gly Pro Thr Ser Pro Leu Val Phe Val
60 65 70

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Pro Ser Ser Pro Arg Leu Ser Pro Phe Met His Pro Pro Ser His His			
75	80	85	
tat ctg gaa acc act tcc acg ccc gtt tac aga tcc agc cac cag gga			522
Tyr Leu Glu Thr Thr Ser Thr Pro Val Tyr Arg Ser Ser His Gln Gly			
90	95	100	
gcc tcc agg gag gac cag tgc ggc tcc cgg gag gac acg tgc agc ctg			570
Ala Ser Arg Glu Asp Gln Cys Gly Ser Arg Glu Asp Thr Cys Ser Leu			
105	110	115	120
ggg gag tta ggc gcc gga gcc ggg gct ggg ggg ttt gag atg gcc aaa			618
Gly Glu Leu Gly Ala Gly Ala Gly Gly Phe Glu Met Ala Lys			
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gac acg cgt ttc tgc gcc gtg tgc agc gac tac gcc tct ggg tac cac			666
Asp Thr Arg Phe Cys Ala Val Cys Ser Asp Tyr Ala Ser Gly Tyr His			
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Tyr Gly Val Trp Ser Cys Glu Gly Cys Lys Ala Phe Phe Lys Arg Ser			
155	160	165	
atc cag ggt cac aat gac tat atg tgc cca gcg acc aat cag tgc act			762
Ile Gln Gly His Asn Asp Tyr Met Cys Pro Ala Thr Asn Gln Cys Thr			
170	175	180	
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Ile Asp Arg Asn Arg Arg Lys Ser Cys Gln Ala Cys Arg Leu Arg Lys			
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Cys Tyr Glu Val Gly Met Met Lys Gly Gly Val Arg Lys Asp Arg Ile			
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Arg Ile Leu Arg Arg Asp Lys Arg Arg Thr Gly Val Gly Asp Gly Asp			
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Lys Val Val Lys Gly Gln Glu His Lys Thr Val His Tyr Asp Gly Arg			
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Lys Arg Ser Ser Thr Gly Gly Gly Gly Gly Gly Gly Arg Leu			
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Ser Val Thr Ser Ile Pro Pro Glu Gln Val Leu Leu Leu Gln Gly			
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gcc gag ccc ccg ata ctc tgc tcg cgt cag aag ttg agc cga ccg tac			1098
Ala Glu Pro Pro Ile Leu Cys Ser Arg Gln Lys Leu Ser Arg Pro Tyr			
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Thr Glu Val Thr Met Met Thr Leu Leu Thr Ser Met Ala Asp Lys Glu			

300

305

310

ctg gtc cac atg atc gcc tgg gcc aag aag ctc cca ggt ttt ctg cag	1194																																																																																																										
Leu Val His Met Ile Ala Trp Ala Lys Lys Leu Pro Gly Phe Leu Gln																																																																																																											
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Leu Ser Leu His Asp Gln Val Leu Leu Leu Glu Ser Ser Trp Leu Glu																																																																																																											
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gtg ctc atg atc ggc ctc att tgg agg tcc atc cac tgt ccc ggg aag	1290																																																																																																										
Val Leu Met Ile Gly Leu Ile Trp Arg Ser Ile His Cys Pro Gly Lys																																																																																																											
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ctc atc ttt gca caa gac ctc atc ctg gac agg aat gag gga gac tgc	1338																																																																																																										
Leu Ile Phe Ala Gln Asp Leu Ile Leu Asp Arg Asn Glu Gly Asp Cys																																																																																																											
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gtg gaa ggc atg acg gag atc ttc gac atg ctg ctg gcc act gct tcc	1386																																																																																																										
Val Glu Gly Met Thr Glu Ile Phe Asp Met Leu Leu Ala Thr Ala Ser																																																																																																											
380	385	390		cgc ttc cgt gtg ctc aaa ctc aaa cct gag gaa ttc gtc tgc ctc aaa	1434	Arg Phe Arg Val Leu Lys Leu Lys Pro Glu Glu Phe Val Cys Leu Lys		395	400	405		gct att att tta ctc aac tcc ggt gct ttt tct ttc tgc acc ggc acc	1482	Ala Ile Ile Leu Leu Asn Ser Gly Ala Phe Ser Phe Cys Thr Gly Thr		410	415	420		atg gag cca ctt cac aac agc gcg gcg gtt cag agc atg ctg gac acc	1530	Met Glu Pro Leu His Asn Ser Ala Ala Val Gln Ser Met Leu Asp Thr		425	430	435	440	atc aca gac gca ctc att cat tac atc agt cag tcg ggt tac ttg gcc	1578	Ile Thr Asp Ala Leu Ile His Tyr Ile Ser Gln Ser Gly Tyr Leu Ala		445	450	455		cag gag cag gcg aga cgg cag gcc cag ctg ctc ctg ctg ctc tcc cac	1626	Gln Glu Gln Ala Arg Arg Gln Ala Gln Leu Leu Leu Leu Ser His		460	465	470		atc agg cac atg agc aac aaa ggc atg gag cac ctc tac agc atg aag	1674	Ile Arg His Met Ser Asn Lys Gly Met Glu His Leu Tyr Ser Met Lys		475	480	485		tgc aag aac aaa gtc cct ctt tat gac ctc cta ctg gag atg ctc gat	1722	Cys Lys Asn Lys Val Pro Leu Tyr Asp Leu Leu Leu Glu Met Leu Asp		490	495	500		gcc cac cgc ctg cac cac ccc gtc aga gca ccc cag tcc ttg tcc caa	1770	Ala His Arg Leu His His Pro Val Arg Ala Pro Gln Ser Leu Ser Gln		505	510	515	520	gtc gac aga gac cct ccc tcc acc agc agc ggc ggg ggt gga atc gct	1818	Val Asp Arg Asp Pro Pro Ser Thr Ser Ser Gly Gly Gly Gly Ile Ala		525	530	535																																	
390																																																																																																											
cgc ttc cgt gtg ctc aaa ctc aaa cct gag gaa ttc gtc tgc ctc aaa	1434																																																																																																										
Arg Phe Arg Val Leu Lys Leu Lys Pro Glu Glu Phe Val Cys Leu Lys																																																																																																											
395	400	405		gct att att tta ctc aac tcc ggt gct ttt tct ttc tgc acc ggc acc	1482	Ala Ile Ile Leu Leu Asn Ser Gly Ala Phe Ser Phe Cys Thr Gly Thr		410	415	420		atg gag cca ctt cac aac agc gcg gcg gtt cag agc atg ctg gac acc	1530	Met Glu Pro Leu His Asn Ser Ala Ala Val Gln Ser Met Leu Asp Thr		425	430	435	440	atc aca gac gca ctc att cat tac atc agt cag tcg ggt tac ttg gcc	1578	Ile Thr Asp Ala Leu Ile His Tyr Ile Ser Gln Ser Gly Tyr Leu Ala		445	450	455		cag gag cag gcg aga cgg cag gcc cag ctg ctc ctg ctg ctc tcc cac	1626	Gln Glu Gln Ala Arg Arg Gln Ala Gln Leu Leu Leu Leu Ser His		460	465	470		atc agg cac atg agc aac aaa ggc atg gag cac ctc tac agc atg aag	1674	Ile Arg His Met Ser Asn Lys Gly Met Glu His Leu Tyr Ser Met Lys		475	480	485		tgc aag aac aaa gtc cct ctt tat gac ctc cta ctg gag atg ctc gat	1722	Cys Lys Asn Lys Val Pro Leu Tyr Asp Leu Leu Leu Glu Met Leu Asp		490	495	500		gcc cac cgc ctg cac cac ccc gtc aga gca ccc cag tcc ttg tcc caa	1770	Ala His Arg Leu His His Pro Val Arg Ala Pro Gln Ser Leu Ser Gln		505	510	515	520	gtc gac aga gac cct ccc tcc acc agc agc ggc ggg ggt gga atc gct	1818	Val Asp Arg Asp Pro Pro Ser Thr Ser Ser Gly Gly Gly Gly Ile Ala		525	530	535																																									
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Met Glu Pro Leu His Asn Ser Ala Ala Val Gln Ser Met Leu Asp Thr																																																																																																											
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atc aca gac gca ctc att cat tac atc agt cag tcg ggt tac ttg gcc	1578																																																																																																										
Ile Thr Asp Ala Leu Ile His Tyr Ile Ser Gln Ser Gly Tyr Leu Ala																																																																																																											
445	450	455		cag gag cag gcg aga cgg cag gcc cag ctg ctc ctg ctg ctc tcc cac	1626	Gln Glu Gln Ala Arg Arg Gln Ala Gln Leu Leu Leu Leu Ser His		460	465	470		atc agg cac atg agc aac aaa ggc atg gag cac ctc tac agc atg aag	1674	Ile Arg His Met Ser Asn Lys Gly Met Glu His Leu Tyr Ser Met Lys		475	480	485		tgc aag aac aaa gtc cct ctt tat gac ctc cta ctg gag atg ctc gat	1722	Cys Lys Asn Lys Val Pro Leu Tyr Asp Leu Leu Leu Glu Met Leu Asp		490	495	500		gcc cac cgc ctg cac cac ccc gtc aga gca ccc cag tcc ttg tcc caa	1770	Ala His Arg Leu His His Pro Val Arg Ala Pro Gln Ser Leu Ser Gln		505	510	515	520	gtc gac aga gac cct ccc tcc acc agc agc ggc ggg ggt gga atc gct	1818	Val Asp Arg Asp Pro Pro Ser Thr Ser Ser Gly Gly Gly Gly Ile Ala		525	530	535																																																																	
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cag gag cag gcg aga cgg cag gcc cag ctg ctc ctg ctg ctc tcc cac	1626																																																																																																										
Gln Glu Gln Ala Arg Arg Gln Ala Gln Leu Leu Leu Leu Ser His																																																																																																											
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atc agg cac atg agc aac aaa ggc atg gag cac ctc tac agc atg aag	1674																																																																																																										
Ile Arg His Met Ser Asn Lys Gly Met Glu His Leu Tyr Ser Met Lys																																																																																																											
475	480	485		tgc aag aac aaa gtc cct ctt tat gac ctc cta ctg gag atg ctc gat	1722	Cys Lys Asn Lys Val Pro Leu Tyr Asp Leu Leu Leu Glu Met Leu Asp		490	495	500		gcc cac cgc ctg cac cac ccc gtc aga gca ccc cag tcc ttg tcc caa	1770	Ala His Arg Leu His His Pro Val Arg Ala Pro Gln Ser Leu Ser Gln		505	510	515	520	gtc gac aga gac cct ccc tcc acc agc agc ggc ggg ggt gga atc gct	1818	Val Asp Arg Asp Pro Pro Ser Thr Ser Ser Gly Gly Gly Gly Ile Ala		525	530	535																																																																																	
485																																																																																																											
tgc aag aac aaa gtc cct ctt tat gac ctc cta ctg gag atg ctc gat	1722																																																																																																										
Cys Lys Asn Lys Val Pro Leu Tyr Asp Leu Leu Leu Glu Met Leu Asp																																																																																																											
490	495	500		gcc cac cgc ctg cac cac ccc gtc aga gca ccc cag tcc ttg tcc caa	1770	Ala His Arg Leu His His Pro Val Arg Ala Pro Gln Ser Leu Ser Gln		505	510	515	520	gtc gac aga gac cct ccc tcc acc agc agc ggc ggg ggt gga atc gct	1818	Val Asp Arg Asp Pro Pro Ser Thr Ser Ser Gly Gly Gly Gly Ile Ala		525	530	535																																																																																									
500																																																																																																											
gcc cac cgc ctg cac cac ccc gtc aga gca ccc cag tcc ttg tcc caa	1770																																																																																																										
Ala His Arg Leu His His Pro Val Arg Ala Pro Gln Ser Leu Ser Gln																																																																																																											
505	510	515	520	gtc gac aga gac cct ccc tcc acc agc agc ggc ggg ggt gga atc gct	1818	Val Asp Arg Asp Pro Pro Ser Thr Ser Ser Gly Gly Gly Gly Ile Ala		525	530	535																																																																																																	
515	520																																																																																																										
gtc gac aga gac cct ccc tcc acc agc agc ggc ggg ggt gga atc gct	1818																																																																																																										
Val Asp Arg Asp Pro Pro Ser Thr Ser Ser Gly Gly Gly Gly Ile Ala																																																																																																											
525	530	535																																																																																																									
535																																																																																																											

ccc ggt tct ata tca gca tct cga ggc aga atc gag agt ccg agc aga Pro Gly Ser Ile Ser Ala Ser Arg Gly Arg Ile Glu Ser Pro Ser Arg	1866
540 545 550	
ggc ccc ttt gct ccc agt gtc ctt cag tat gga ggg tcg cgt cct gac Gly Pro Phe Ala Pro Ser Val Leu Gln Tyr Gly Ser Arg Pro Asp	1914
555 560 565	
tgc acc ccg gcc ctt caa gac tgagcacaca gtccaaggcc cttttttgt Cys Thr Pro Ala Leu Gln Asp	1965
570 575	
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35 40 45

Thr Asn Gly Pro Pro Ser Glu Gly Ser Leu Gln Ser Leu Gly Ser Gly
50 55 60

Pro Thr Ser Pro Leu Val Phe Val Pro Ser Ser Pro Arg Leu Ser Pro
65 70 75 80

Phe Met His Pro Pro Ser His His Tyr Leu Glu Thr Thr Ser Thr Pro
85 90 95

Val Tyr Arg Ser Ser His Gln Gly Ala Ser Arg Glu Asp Gln Cys Gly
100 105 110

Ser Arg Glu Asp Thr Cys Ser Leu Gly Glu Leu Gly Ala Gly Ala Gly
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Ala Gly Gly Phe Glu Met Ala Lys Asp Thr Arg Phe Cys Ala Val Cys
130 135 140

Ser Asp Tyr Ala Ser Gly Tyr His Tyr Gly Val Trp Ser Cys Glu Gly
145 150 155 160

Cys Lys Ala Phe Phe Lys Arg Ser Ile Gln Gly His Asn Asp Tyr Met
165 170 175

Cys Pro Ala Thr Asn Gln Cys Thr Ile Asp Arg Asn Arg Arg Lys Ser
180 185 190

Cys Gln Ala Cys Arg Leu Arg Lys Cys Tyr Glu Val Gly Met Met Lys
195 200 205

Gly Gly Val Arg Lys Asp Arg Ile Arg Ile Leu Arg Arg Asp Lys Arg
210 215 220

Arg Thr Gly Val Gly Asp Gly Asp Lys Val Val Lys Gly Gln Glu His
225 230 235 240

Lys Thr Val His Tyr Asp Gly Arg Lys Arg Ser Ser Thr Gly Gly Gly
245 250 255

Gly Gly Gly Gly Gly Arg Leu Ser Val Thr Ser Ile Pro Pro Glu

260

265

270

Gln Val Leu Leu Leu Gln Gly Ala Glu Pro Pro Ile Leu Cys Ser
275 280 285

Arg Gln Lys Leu Ser Arg Pro Tyr Thr Glu Val Thr Met Met Thr Leu
290 295 300

Leu Thr Ser Met Ala Asp Lys Glu Leu Val His Met Ile Ala Trp Ala
305 310 315 320

Lys Lys Leu Pro Gly Phe Leu Gln Leu Ser Leu His Asp Gln Val Leu
325 330 335

Leu Leu Glu Ser Ser Trp Leu Glu Val Leu Met Ile Gly Leu Ile Trp
340 345 350

Arg Ser Ile His Cys Pro Gly Lys Leu Ile Phe Ala Gln Asp Leu Ile
355 360 365

Leu Asp Arg Asn Glu Gly Asp Cys Val Glu Gly Met Thr Glu Ile Phe
370 375 380

Asp Met Leu Leu Ala Thr Ala Ser Arg Phe Arg Val Leu Lys Leu Lys
385 390 395 400

Pro Glu Glu Phe Val Cys Leu Lys Ala Ile Ile Leu Leu Asn Ser Gly
405 410 415

Ala Phe Ser Phe Cys Thr Gly Thr Met Glu Pro Leu His Asn Ser Ala
420 425 430

Ala Val Gln Ser Met Leu Asp Thr Ile Thr Asp Ala Leu Ile His Tyr
435 440 445

Ile Ser Gln Ser Gly Tyr Leu Ala Gln Glu Gln Ala Arg Arg Gln Ala
450 455 460

Gln Leu Leu Leu Leu Ser His Ile Arg His Met Ser Asn Lys Gly
465 470 475 480

Met Glu His Leu Tyr Ser Met Lys Cys Lys Asn Lys Val Pro Leu Tyr
485 490 495

Asp Leu Leu Leu Glu Met Leu Asp Ala His His Arg Leu His His Pro Val
500 505 510

Arg Ala Pro Gln Ser Leu Ser Gln Val Asp Arg Asp Pro Pro Ser Thr
515 520 525

Ser Ser Gly Gly Gly Ile Ala Pro Gly Ser Ile Ser Ala Ser Arg
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Gly Arg Ile Glu Ser Pro Ser Arg Gly Pro Phe Ala Pro Ser Val Leu
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